WHAT IS CLAIMED IS:

1. A semiconductor laser comprising:

a substrate;

a QW active layer structure formed over said substrate, wherein said QW active layer structure includes at least one QW layer comprising $Ga_xIn_{1-x}As_ySb_{1-y}$, and wherein $0.3 \leq 1-x$ and wherein $0.003 \leq 1-y \leq 0.008$.

2. The semiconductor laser of Claim 1, wherein said substrate comprises GaAs.

3. The semiconductor laser of Claim 1, wherein said laser emits laser light having a wavelength of at least about 1.18 μm.

4. The semiconductor laser of Claim 1, wherein said semiconductor laser comprises a VCSEL.

5. The semiconductor laser of Claim 4 comprising at least two QW layers of$Ga_xIn_{1-x}As_ySb_{1-y}$.

6. The semiconductor laser of Claim 1, wherein said semiconductor laser comprises an edge emitting laser.

7. A method of making a QW layer for a semiconductor laser comprising depositing a layer of Ga, In, As, and Sb onto a GaAs substrate, wherein said In is included at an atomic ratio of 30% or more relative to Group-III elements, and wherein said depositing is performed with a partial pressure of Sb that is sufficient to form an active layer of about 0.3% to about 0.8% in atomic ratio of Sb relative to Group-V elements.

8. A method of making a QW layer for a semiconductor laser comprising depositing a layer of Ga, In, N, As, and Sb onto a GaAs substrate, wherein said In is included at an atomic ratio of 30% or more relative to Group-III elements, and wherein said depositing is performed with a partial pressure of Sb that is sufficient to form an active layer of about 0.2% to about 6% in atomic ratio of Sb relative to Group-V elements.

9. The method of Claim 8, wherein said active layer is deposited between barrier layers of GaN_zAs_{1-z}.

10. The method of Claim 9, additionally comprising heat treating said active layer after deposition at a temperature of about 675 to 725 degrees C.

11. A semiconductor laser comprising:

a substrate;

a QW active layer structure formed over said substrate, wherein said QW active layer structure includes at least oneQW layers comprises $Ga_xIn_{1-x}As_{1-y1-y2}N_{y1}Sb_{y2}$, wherein $0.3 \leq 1-x$, wherein $0 \leq y1 \leq 0.03$, and wherein $0.002 \leq y2 \leq 0.06$.

12. The semiconductor laser of Claim 11, wherein said substrate comprises GaAs.

13. The semiconductor laser of Claim 11, wherein said laser emits laser light having a wavelength of at least about 1.24 μm.

14. The semiconductor laser of Claim 11, wherein said semiconductor laser comprises a VCSEL.

15. The semiconductor laser of Claim 14 comprising at least two QW layers of $Ga_xIn_{1-x}As_{1-y1-y2}N_{y1}Sb_{y2}$.

16. The semiconductor laser of Claim 11, wherein said semiconductor laser comprises an edge emitting laser.

17. The semiconductor laser of Claim 11, wherein at least one of said active layers is placed between barrier layers of GaN_zAs_{1-z}.

18. The semiconductor laser of Claim 17, wherein $0 \leq z \leq 0.05$.

19. A semiconductor laser comprising:

an active layer comprising co-deposited Ga, As, In, N, and Sb; and

a pair of barrier layers, one on each side of said active layer, said barrier layers comprising Ga, As, and N.

20. The semiconductor laser of Claim 19, wherein said substrate comprises GaAs.

21. The semiconductor laser of Claim 19, wherein said semiconductor laser has a lasing wavelength of at least about 1.24 μm.

22. The semiconductor laser of Claim 19, wherein said semiconductor laser comprises a VCSEL

23. The semiconductor laser of Claim 19, wherein said semiconductor laser comprises an edge emitting laser.

24. A method of making a semiconductor laser comprising:

depositing a first barrier layer of GaN_zAs_{1-z} onto a substrate;

depositing an active layer of $Ga_xIn_{1-x}As_{1-y1-y2}N_{y1}Sb_{y2}$ over said first barrier layer; and

depositing a second barrier layer of GaN_zAs_{1-z} over said active layer.

25. The method of Claim 24, wherein said substrate comprises GaAs.

26. The semiconductor laser of Claim 24, wherein said semiconductor laser comprises a VCSEL.

27. The semiconductor laser of Claim 24, wherein said semiconductor laser comprises an edge emitting laser.

28. The method of Claim 24, wherein $0.3 \leq 1\text{-}x$, wherein $0 \leq y1 \leq 0.03$, and wherein $0.002 \leq y2 \leq 0.06$.

29. The method of Claim 24 wherein $0 < z \leq 0.05$.

30. The method of Claim 24, additionally comprising heat treating said layers at a temperature of about 675 to about 725 degrees C.

31. A method for manufacturing a semiconductor laser device comprising:

forming a laser structure by depositing a QW active layer structure over a substrate, wherein said QW active layer structure includes at least one QW layer comprising $Ga_xIn_{1-x}As_{1-y1-y2}N_{y1}Sb_{y2}$, wherein $0.3 \leq 1\text{-}x$, wherein $0 \leq y1 \leq 0.007$, and wherein $0.002 \leq y2 \leq 0.06$, and

heat treating said laser structure, after growth of said QW active layer structure at a temperature of about 570 to 630 degrees C.

32. A method for manufacturing a semiconductor laser device comprising:

forming a laser structure by depositing a QW active layer structure over a substrate, wherein said QW active layer structure includes at least one QW layer comprising $Ga_xIn_{1-x}As_{1-y1-y2}N_{y1}Sb_{y2}$, wherein $0.3 \leq 1\text{-}x$, wherein $0.007 \leq y1 \leq 0.03$, and wherein $0.002 \leq y2 \leq 0.06$, and

heat treating said laser structure, after growth of said QW active layer structure at a temperature of about 670 to 730 degrees C.